

# Textiles and Fibers

Benefit from a comprehensive portfolio of high-performance materials for widely differing applications





# Strong Market Reputation

LyondellBasell is one of the world's largest suppliers of polyolefins and advanced polyolefins to producers of textiles and fibers.

Our comprehensive portfolio offers a wide range of polypropylene grades (*Moplen*), high density polyethylene (*Hostalen*), as well as advanced polyolefins (*Adflex*) for the production of strapping, monofilaments, tapes, continuous filaments, staple fibers, spun-bond and melt blown nonwovens.

LyondellBasell works diligently to bring innovative resins to the market and we continuously develop new opportunities for polyolefins to replace other polymers and alternative materials by offering properties and performance characteristics that are unmatched in the industry.

## **Adding value for customers**

Our vertically integrated facilities, broad product portfolio, manufacturing flexibility, superior technology base and reputation for operational excellence enable us to deliver exceptional value to our customers. Additionally, our team's experience and know-how deliver a competitive advantage in a market with a diverse set of applications.

# High Density Polyethylene Resins

*Hostalen* textile grades are widely used in differing markets and applications ranging from packaging for agricultural products to various protective netting applications.

## **Hostalen ACP 7740 F1, Hostalen ACP 7740 F2 and Hostalen GF 7740 F2**

*Hostalen ACP 7740 F1* and *Hostalen ACP 7740 F2* are two high density polyethylene resin with medium molar mass and special narrow molar mass distribution for production of tapes. *Hostalen ACP 7740 F1* contains a lubricant.

*Hostalen GF 7740 F2* is also a high density polyethylene resin with medium molar mass with slightly broader molecular mass distribution compared to the resins mentioned above.

All grades are appreciated by customers for converting on all tape-stretching and film-stretching lines to products with high tensile strength and high elongation at break, textile-like behavior and low tendency to fibrillation.

### **Typical applications:**

- Packaging for agricultural products
- Protective netting in agriculture and building Industry
- Coated (with PELD) and uncoated fabrics
- *Hostalen ACP7740 F1* is special formulated for Tubular nets

### **Processing conditions**

These grades should be processed using a decompression screw to prevent overheating of the melt. Primary film is mainly produced on blown film lines with low blow up ratios of about 1.5:1.

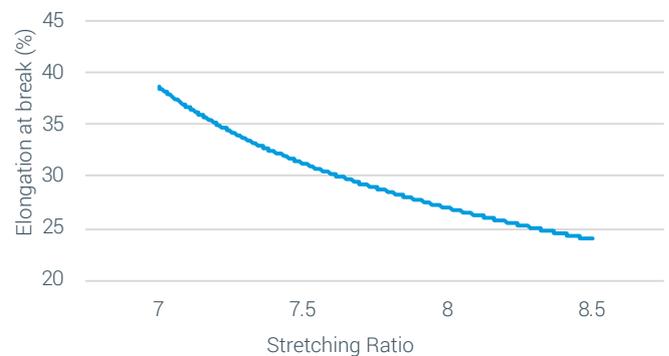
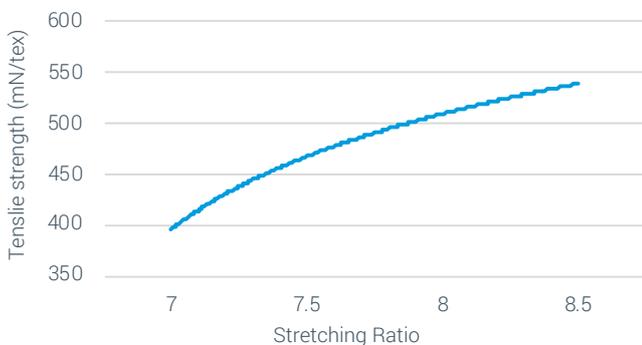
### **Typical temperature program**

Extruder: 180-220°C

Die head: 220-230°C

Hot air oven: 120°C

Stretch ratio depends on tape properties (tensile strength and elongation at break).



### **ISO Stretching line ETN 29-1**

Testing conditions:

Film thickness 75 microns

Tape: width 5.08 mm

Throughput: 60 kg/h

Temperature comb. 90 °C/heating Plate 110 °C

### Hostalen ACP 7740 F3

Hostalen ACP 7740 F3 is a high density polyethylene with medium molar mass and special narrow molar mass distribution for production of tapes.

Market feedback reflects that Hostalen ACP 7740 F3 is appreciated for converting on the so called Mayer-Iso-lines to products with excellent mechanical and textile properties and low tendency to fibrillation.

Compared to a standard grade Hostalen ACP 7740 F3 exhibits a substantial higher stretch-ability and a distinct improved tensile strength combined with better elongation at break.

#### Typical applications:

- Round bale and pallet netting
- Packaging tubes and bags
- Higher tenacity tapes and nets

#### Processing conditions

Hostalen ACP 7740 F3 should be processed using a decompression screw to prevent overheating of the melt. Primary film is mainly produced on blown film lines with low blow up ratios of about 1.5:1.

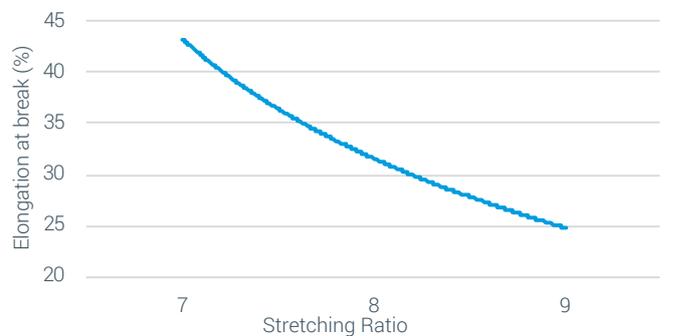
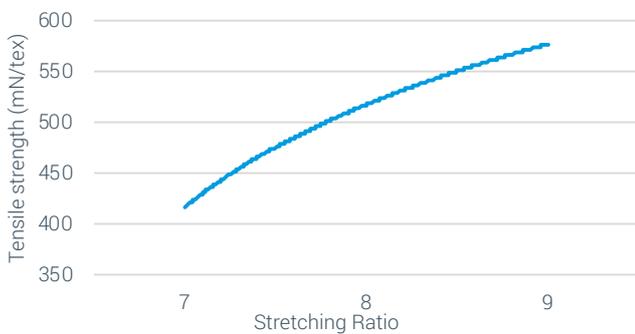
#### Typical temperature program:

Extruder:180-220°C

Die head: 220-230°C

Hot air oven:120°C

Stretch ratio depends on tape properties (tensile strength and elongation at break).



### ISO Stretching line ETN 29-1

Testing conditions:

Film thickness 75 microns

Tape: width 5.08 mm

Throughput: 60 kg/h

Temperature comb.90 °C/heating Plate 110 °C

### Hostalen GF 7750 M2

Hostalen GF 7750 M2 is a high density polyethylene with medium molar mass and special narrow molar mass distribution for production of monofilaments. This grade contains a lubricant.

Hostalen GF 7750 M2 is an easy flowing polymer and is appreciated by customers for converting on production lines with hot water bath to monofilaments with excellent tensile strength.

#### Typical applications:

- Ropes and yarns for nets
- Protective netting in agriculture and building industry
- Geotextiles

#### Processing conditions

Hostalen GF 7750 M2 should be processed using decompression screw to prevent overheating of the melt. Die hole design: land length/diameter ratio= 4:1.

#### Typical temperature program:

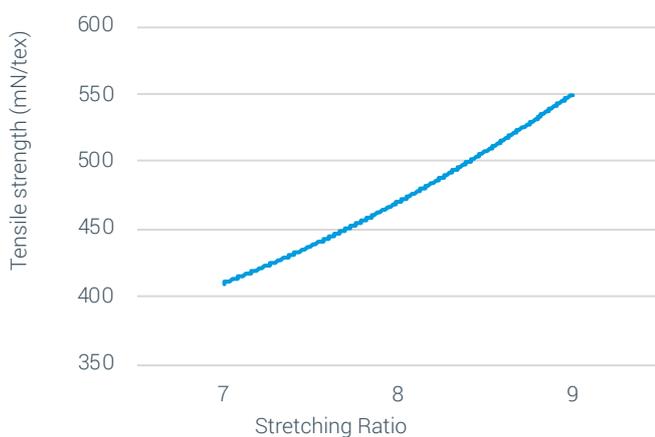
Extruder: 200-250°C

Die head: 250-260°C

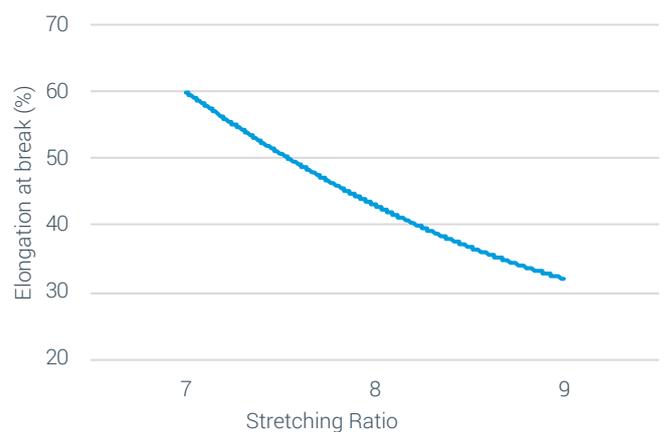
Hot water bath: 97°C

Hot air oven: 120°C

Stretch ratio depends on monofilament properties (tensile strength and elongation at break).



Monofilament diameter 0.32 mm



Monofilament diameter 0.32 mm

Monofilaments stretched in boiling water bath (97 °C) and annealed in hot air oven (120 °C)

Testing: span 250 mm, elongation speed 250 mm/min

### Hostalen GF 7750 M3

Hostalen GF 7750 M3 is a high density polyethylene with medium molar mass and special narrow molar mass distribution for production of high tenacity monofilaments. This grade contains a lubricant.

Hostalen GF 7750 M3 is an easy flowing polymer and is appreciated by customers for converting on production lines with hot water bath to monofilaments with excellent tensile strength.

#### Typical applications:

- Ropes and yarns for fishnets
- Anti-hail nets
- Protective netting in agriculture and building industry
- Geotextiles
- Monofilament requiring higher tenacity

#### Processing conditions

Hostalen GF 7750 M3 should be processed using decompression screw to prevent overheating of the melt. Die hole design: land length/diameter ratio= 4:1.

#### Typical temperature program:

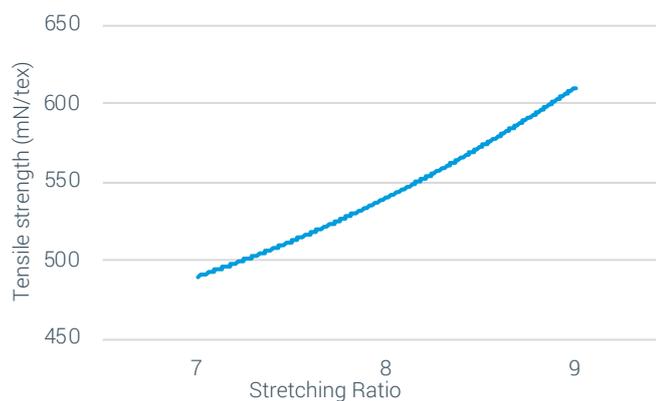
Extruder: 200-250°C

Die head: 250-260°C

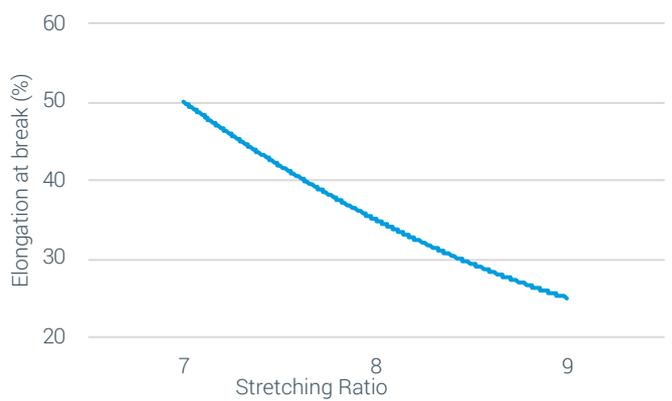
Hot water bath: 97°C

Hot air oven: 120°C

Stretch ratio depends on monofilament properties (tensile strength and elongation at break).



Monofilament diameter 0.32 mm



Monofilament diameter 0.32 mm

Monofilaments stretched in boiling water bath (97 °C) and annealed in hot air oven (120 °C)

Testing: span 250 mm, elongation speed 250 mm/min

# Polypropylene Resins

Polypropylene is advantageously used in a diverse set of textile applications ranging from geotextiles which stabilize our roads to non-woven fabrics which help to keep the baby's skin dry. All LYB grades are produced with the latest generation of Avant Ziegler/Natta non-Phthalate catalyst.

## Fibers and Fabrics

With its low density polypropylene yields the highest volume of fiber per unit weight compared with other fiber, such as nylon, polyester and acrylic, offering light-weight fabrics with high loft. Polypropylene fabrics have the ability to transmit moisture instead of absorbing it, making it the material of choice for sanitary products. Polypropylene fibers and yarns are used to make a wide range of high quality carpets and fabrics as well as nonwovens. LYB offers a wide range of polypropylene grades for fiber applications.

### **Moplen HP561R**

This grade has a very-narrow molecular weight distribution and is used for the production of high-tenacity yarns and spun bond nonwovens. With MFR 25 g/10 min (2.16 kg/230°C), *Moplen HP561R* is formulated with an anti-gas fading stabilization package.

### **Moplen HP561S**

This grade has a very-narrow molecular weight distribution and is used for the production of fine filaments for spun bond nonwovens. With MFR 32 g/10 min (2.16 kg/230°C), *Moplen HP561S* is formulated with an anti-gas fading stabilization package.

### **Moplen PP567P**

A homo-polymer grade with MFR 18 g/10 min (2.16 kg/230°C) that is formulated with an anti-gas fading stabilization package. *Moplen PP567P* has a narrow molecular weight distribution and is used for the production of high-tenacity spun-bonded nonwovens.

### **Moplen HP561S HP**

This grade has a very-narrow molecular weight distribution and is used for the production of fine filaments for spun bond nonwovens with superior mechanical strength. With MFR 36 g/10 min (2.16 kg/230°C), *Moplen HP561S HP* is formulated with an anti-gas fading stabilization package.



### **Moplen HP452J, HP552K, HP552L**

The higher molecular weight of these grades can enable customers to increase the fiber tenacity, which translates into stronger nonwovens. These grades are formulated with an anti-gas fading stabilization package and are used for the production of high-tenacity staple fibers.

### **Moplen HP554M, HP552N, HP552R**

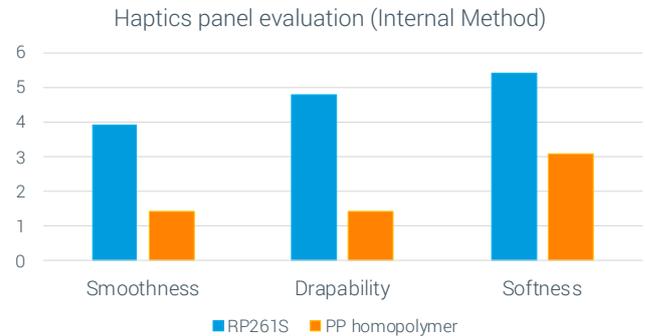
These homo-polymer grades are formulated with an anti-gas fading stabilization package and are used for the production of staple fibers and continuous filaments. *Moplen HP554M* is suitable for the production of staple fibres with high thermal-bonding strength.

### Outstanding softness with *Moplen RP261S*

*Moplen RP261S* is a new polypropylene copolymer with MFR 30 and a very narrow molecular weight distribution.

*Moplen RP261S* is formulated with an anti-gas fading stabilization package and is developed for the production of spunbond nonwovens and continuous filaments with very high softness and very high flexibility.

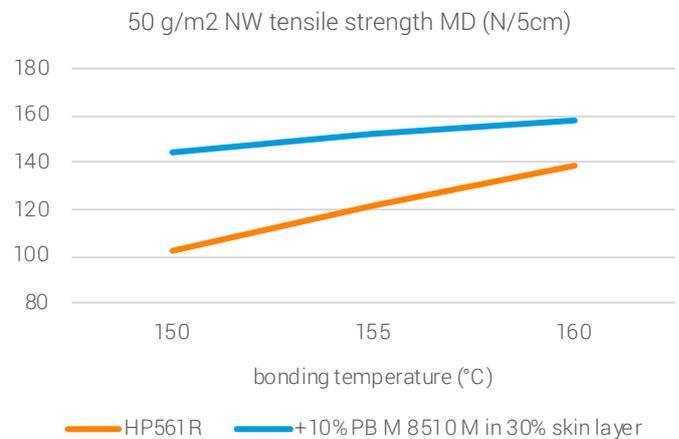
*Moplen RP261S* significantly advances the softness and comfort of polypropylene textiles.



### Improved nonwoven tensile strength by adding Polybutylene-1

Polybutylene-1 (PB-1) grades are the latest member of our polyolefins family. The extra methyl group present on the Butene-1 monomer compared to the Propene-1 makes PB-1 compatible with polypropylene but incompatible with polyethylene. The incompatibility between PE and PB-1 is used in seal-peel and re-closable applications in flexible packaging while PB-1 is used as sealing booster in BOPP packaging films. Similarly adding only 3% of *Koattro PB M 8510 M* into PP increases the sealing strength of PP filaments and the resulting nonwoven tensile strength.

Other applications of PB-1 grades in textile applications include the production of mono-material and recyclable polyolefin carpets where our very soft *Koattro PB M 1200 M* is extruded along with CaCO<sub>3</sub> to form the carpet backing replacing latex or bitumen.

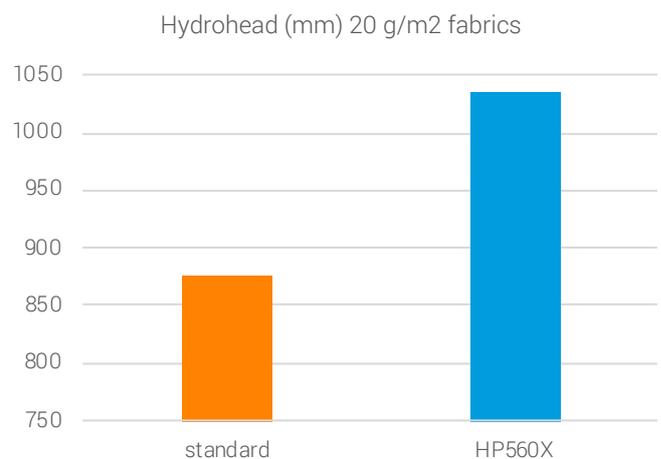


### Microfilaments

LyondellBasell has a wide range of very high-fluidity grades that are successfully used by customers for the production of melt blown nonwovens and for compounding applications.

#### *Moplen HP560W (MFR 450\*) / Moplen HP560X (MFR 800\*) / Moplen HP560Y (MFR 1200\*) / Moplen HP560Z (MFR 1500\*)*

These *Moplen* grades are setting new references in terms of processing and performance. The very narrow molecular weight distribution (MWD) of our grades allows filament diameter to be reduced by up to 20% compared with standard grades. The resulting finer filaments can deliver a markedly improved barrier performance (increased hydro-head and reduced air permeability) as well as soft-touch characteristics that add value to sanitary and filtering products. The use of the latest generation of *Avant* Ziegler/Natta non-phthalate catalyst opens the door for a range of applications that require the purest of polypropylene grades.



\* g/10 min (2.16 kg/230°C)



### Strapping

Polypropylene strapping is typically used by customers when content needs to be tightly packed. Its high breaking energy can result in a great ability to absorb shock loads and its flexibility reduces edge and corner deformations, sometimes even allowing the elimination of corner protectors that can reduce package costs. Polypropylene straps have no sharp edges and no rust stains, while being light, unaffected by moisture, easy and safe to remove.

*Moplen* HP556E is used in this application

### Tapes, Twines and Ropes

Polypropylene tapes are woven or knitted in textile products such as carpet backing, knitting and sewing threads, face yarns for tufted carpets, artificial turf, reusable bags, sacks, flexible intermediate bulk containers, industrial fabrics for civil engineering uses, geotextiles, baler twines, ropes and industrial filters. *Moplen* HP450H, *Moplen* HP456H, *Moplen* HP456J and *Adflex* Q100F are used in these applications.

# Main Product Portfolio

Properties	MFR [g / 10'] 190 °C / 5 kg	MFR [g / 10'] 190 °C / 21.6 kg	FRR 21,6 kg / 5 kg	Density g / cm <sup>3</sup>	Additivation	Features/ Application
<b>High Density Polyethylene</b>						
<i>Hostalen ACP 7740 F1</i>	1,8	18	10	0,948	Lubricant	Narrow MWD, Tubular nets, Slit films & tapes, Various nets
<i>Hostalen ACP 7740 F2</i>	1,8	18	10	0,948		Narrow MWD, Slit films & tapes, Various nets
<i>Hostalen GF 7740 F2</i>	1,8	23	13	0,946		Slit films & tapes, Various nets
<i>Hostalen ACP 7740 F3</i>	1,6	17	10	0,946		Narrow MWD, Round Bale Nets
<i>Hostalen GF 7750 M2</i>	3,3	33	10	0,957	Lubricant	Monofilament, various nets
<i>Hostalen GF 7750 M3</i>	1,7	18	11	0,957	Lubricant	High tenacity monofilaments, Various nets

Properties	MFR [g / 10'] 230 °C/2,16 kg	Additivation	Features/Application
<b>Polypropylene Strapping - Tapes Monofilament</b>			
<i>Adflex Q100F</i>	0,6		Strapping
<i>Moplen HP556E</i>	0,8	Low WCO	Strapping
<i>Moplen HP450H</i>	1,8	Low WCO	Strapping, tapes, monofilaments
<i>Moplen HP456H</i>	1,8	Low WCO	Strapping, tapes, monofilaments
<i>Moplen HP456J</i>	3,4	Low WCO	Strapping, tapes, monofilaments

<b>Polypropylene Staple Fibers - CF/BCF</b>			
<i>Moplen HP452J</i>	3,4	AGF	Staple fibers
<i>Moplen HP552K</i>	4	AGF	Staple fibers
<i>Moplen HP552L</i>	6	AGF	Staple fibers
<i>Moplen HP554M</i>	11,5	AGF	Thermal-bonding staple fibers
<i>Moplen HP552N</i>	13	AGF	Staple fibers, CF
<i>Moplen HP552R</i>	25	AGF	Staple fibers, CF/BCF
<i>Moplen RP261S</i>	30	AGF	High softness

<b>Polypropylene Spun bond - POY - HTY</b>			
<i>Moplen PP567P</i>	18	AGF	Narrow MWD for spun bond, HTY
<i>Moplen HP561R</i>	25	AGF	Narrow MWD for spun bond, HTY
<i>Adflex Z101H</i>	27	AGF	In-blend for enhanced softness
<i>Moplen RP261S</i>	30	AGF	Narrow MWD, High softness
<i>Moplen HP561S</i>	32	AGF	Narrow MWD for spun bond, POY
<i>Moplen HP561S HP</i>	36	AGF	Narrow MWD for spun bond, POY

<b>Polypropylene Melt blown</b>			
<i>Moplen HP560W</i>	450		Very narrow MWD
<i>Moplen HP560X</i>	800		Very narrow MWD
<i>Moplen HP560Y</i>	1200		Very narrow MWD
<i>Moplen HP560Z</i>	1500		Very narrow MWD

Properties	MFR [g / 10'] 190°C/ 2.16 kg	Density [g/cm <sup>3</sup> ]	Additivation	Features/Application
<b>Polybutene-1</b>				
<i>Toppyl PB 8310M</i>	3,5	0,897	Antioxidant	Filaments
<i>Koattro PB M 8510 M</i>	45			Filaments
<i>Koattro PB M 1200M</i>	1200	0,908	Antioxidant	Melt blown, Carpet backing

AGF - Anti-Gas Fading  
HTY - High Tenacity Yarn  
POY - Partially Oriented Yarn

MFR - Melt Flow Rate  
BCF/ CF - Bulk Continuous/  
Continuous Filament

MWD - Molecular Weight Distribution  
WCO - Water Carry Over  
FRR - Flow Rate Ratio

# ABOUT US

As a leader in the global chemical industry, LyondellBasell strives every day to be the safest, best operated and most valued company in our industry. The company's products, materials and technologies are advancing sustainable solutions for food safety, access to clean water, healthcare and fuel efficiency in more than 100 international markets. LyondellBasell places high priority on diversity, equity and inclusion and is Advancing Good with an emphasis on our planet, the communities where we operate and our future workforce. The company takes great pride in its world-class technology and customer focus. LyondellBasell has stepped up its circularity and climate ambitions and actions to address the global challenges of plastic waste and decarbonization. For more information, please visit [www.lyondellbasell.com](http://www.lyondellbasell.com) or follow [@LyondellBasell](https://www.linkedin.com/company/lyondellbasell) on LinkedIn.

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